a processor, operatively connected to said clock module, for processing instructions in accordance with the clock signal; and

a temperature sensor, operatively connected to said clock module, producing a temperature signal based on the temperature of said processor,

wherein the frequency of the clock signal supplied to said processor varies depending on the temperature of said processor.

2. A computer as recited in claim 1, wherein said processor is a microprocessor.

3. A computer as recited in claim 1, wherein said temperature sensor is thermally coupled to said processor.

4. A computer as recited in claim 1, wherein said temperature sensor is integral with the circuitry of said processor.

5. A computer as recited in claim 1, wherein said computer is a portable computing device.

6. A computer as recited in claim 1, wherein said computer further comprises:

a fan; and

a fan controller, said fan controller controls the speed of the fan in accordance with the chip temperature.

7. A clock control apparatus for a microprocessor, comprising:

a temperature sensor coupled to said microprocessor to monitor a chip temperature of the microprocessor and to produce a temperature signal in accordance with the chip temperature; and

a clock unit, operatively connected to said temperature sensor, for producing a clock for the microprocessor, the clock having a frequency dependent upon the chip temperature of the microprocessor.

8. A clock control apparatus as recited in claim 7, wherein said clock unit comprises a voltage-controlled oscillator (VCO), said VCO receives a chip temperature signal from said temperature sensor and produces the clock having a frequency dependent upon the chip temperature.

9. A clock control apparatus as recited in claim 7,

wherein said clock control apparatus further comprises an activity detector for detecting activity by the microprocessor and producing an activity signal in accordance therewith, and

wherein said clock unit comprises:

a VCO controller for producing a control signal based on the activity signal from said activity detector and a chip temperature signal from said temperature sensor; and

a voltage-controlled oscillator, said voltage-controlled oscillator produces the clock having a frequency dependent upon the control signal.

10. A clock control apparatus as recited in claim 7, wherein said temperature sensor and said clock unit are integral with said microprocessor,

wherein said clock control apparatus further comprises detection means for monitoring activity of the microprocessor, and

wherein the clock produced by said clock unit has its frequency dependent upon both the activity and the chip temperature.

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*11. (Once Amended) A method for producing a clock for a microprocessor, said method comprising:

(a) monitoring chip temperature of the microprocessor;

(b) producing a clock signal having a frequency which varies in accordance with the chip temperature; and

(c) supplying the clock signal to the microprocessor.

*12. (Once Amended) A method as recited in claim 11, wherein the frequency is altered in real-time as the chip temperature changes, and

wherein the frequency of the clock signal decreases [gradually] incrementally as the chip temperature increases beyond a predetermined chip temperature.

*13. (Once Amended) A method as recited in claim 11, wherein said producing (b) comprises:

(b1) receiving a first [slow frequency] clock and a second [fast frequency] clock, the first clock having a frequency greater than a frequency of the second clock by an integer multiplier; and

(b2) selecting the [slow frequency] second clock if the chip temperature exceeds a predetermined temperature, otherwise selecting the [fast frequency] first clock.

*14. (Once Amended) A method as recited in claim 11, wherein said method further comprises (d) monitoring activity of the microprocessor, and

wherein said producing (b) comprises:

(b1) receiving a first [slow frequency] clock and a second [fast frequency] clock, the first clock having a frequency greater than a frequency of the second clock by an integer multiplier; and

(b2) selecting the [slow frequency] second clock if the chip temperature exceeds a predetermined temperature or if there is no activity at the microprocessor, otherwise selecting the [fast frequency] first clock.

*15. (Once Amended) A method as recited in claim 11, wherein said method further comprises (d) monitoring activity of the microprocessor, and

wherein the frequency of the clock signal produced by said producing (b) varies [comprises: (b1) receiving a plurality of clocks, each clock having a different frequency; and (b2) selecting one of the clocks] based on the chip temperature and the activity of the microprocessor.

*16. (Once Amended) A method as recited in claim 15, wherein [one of] the clock[s] signal [is] has an overdrive clock frequency [, and wherein the overdrive clock is selected] when certain activity is present and the chip temperature is below a predetermined temperature.

17. Canceled

18. Canceled

19. Canceled

20. A method as recited in claim 11, wherein said method further comprises (d) producing a variable-speed control signal for a fan with the speed being dependent on the chip temperature.

Please **ADD** new claims 21-35 as follows:

22 21
~~21~~. A method as recited in claim ~~16~~, wherein the certain activity is a cache miss.

22. A method for producing a clock signal for a microprocessor, said method comprising:

(a) providing a fast clock signal;

(b) providing a slow clock signal;

(c) receiving a control signal related to the temperature of the microprocessor; and

(d) selecting between the fast clock signal and slow clock signal in accordance with the control signal.

23. A method as recited in claim 22, wherein the control signal is indirectly related to the temperature of the microprocessor.

24. A method as recited in claim 23, wherein the control signal is influenced by activity of a fan associated with the microprocessor.

25. A method as recited in claim 22, wherein the control signal is related to an anticipated temperature of the microprocessor.

26. A method for producing a clock for a microprocessor, said method comprising:

(a) producing a clock signal having a frequency which varies in accordance with the chip temperature; and

(b) supplying the clock signal to the microprocessor.

27. A method as recited in claim 26, wherein the clock signal varies directly or indirectly with the chip temperature.

28. A method as recited in claim 27, wherein the frequency of the clock signal is influenced by activity of a fan associated with the microprocessor which serves as an indicator of the chip temperature.

29. A method as recited in claim 28, wherein said producing (a) comprises:

(a1) receiving a high frequency clock; and

(a2) dividing the high frequency clock by an integer number when needed to avert overheating by said processor.

30. A method as recited in claim 26,

wherein said method further comprises (c) monitoring activity of the microprocessor, and

wherein the frequency of the clock signal produced by said producing (a) varies based on the chip temperature and the activity of the microprocessor.

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31. A method as recited in claim 30, wherein the clock signal has an overdrive clock frequency when certain activity is present and the chip temperature is below a predetermined temperature.

Sub B10

32. A computer, comprising:

a clock module for producing a clock signal having two or more different frequencies;

a processor, operatively connected to said clock module, for processing instructions in accordance with the clock signal;

a fan for cooling said processor; and

a control signal supplied to said clock module to cause said clock module to lower the frequency of the clock signal when needed to avert overheating by said processor.

13 12

33. A computer as recited in claim 32, wherein the control signal is dependent upon measured or anticipated temperature of said processor.

14 12

34. A computer as recited in claim 32, wherein said clock module and said processor are integral.

Sub B11

35. A computer as recited in claim 32, wherein said computer further comprises an activity detector for detecting activity of said microprocessor, and

wherein said clock module increases the frequency of the clock signal above a normal operating frequency when both certain activity is detected by said activity detector and said control signal is not requesting said clock module to lower the frequency of the clock signal.

REMARKS

In the Office Action, the Examiner rejected claims 12-15, 18 and 19 under the second paragraph of 35 USC 112 and rejected claims 1-20 under 35 USC 103. These rejections are fully traversed below.

Claims 11-16 have been amended to further clarify the subject matter regarded as the invention. Claims 17-19 have been canceled. In addition, new claims 21-35 have been added to the application. Reconsideration of the application is respectfully requested based on the following remarks.

REJECTIONS OF CLAIMS 12-15, 18 AND 19 UNDER 35 USC 112, SECOND PARAGRAPH

In the Office Action, the Examiner rejected claims 12-15, 18 and 19 under the second paragraph of 35 USC 112 as being indefinite. Claims 17-19 have been canceled. Claims 11-16 have been amended to further clarify the subject matter regarded as the invention. In claim 12, the term "gradually" is replaced with the more definite term "incrementally". In claims 13 and 14, the terms "slow frequency" and "fast frequency" are replaced with other